

WHAT IS CLAIMED IS:

1. A recording / reproducing head for recording information in a dielectric material of a dielectric recording medium or reproducing
5 information recorded in the dielectric material of the dielectric recording medium, the recording / reproducing head comprising:

a supporting member of a longitudinal shape which is long in one direction;

a first electrode, which is projective and which is disposed on
10 one end in the one direction of said supporting member, for applying an electric field to the dielectric material;

an electric conductor portion, which is disposed on a surface of said supporting member facing to the dielectric material, for taking an electric connection with said first electrode; and

15 a second electrode disposed on the surrounding of said first electrode.

2. The recording / reproducing head according to claim 1, wherein said recording / reproducing head is used as a device for
20 reproducing the information from the dielectric recording medium on the basis of a scanning nonlinear dielectric microscopy method.

3. A recording / reproducing head for recording information in a dielectric material of a dielectric recording medium or reproducing
25 information recorded in the dielectric material of the dielectric recording medium, the recording / reproducing head comprising:

a supporting member of a longitudinal shape which is long in one direction;

a projection portion disposed on one end in the one direction of said supporting member;

5 a first electrode, which is penetrated from the tip portion of said projection portion and disposed in the central portion of said projection portion, for applying an electric field to the dielectric material;

10 an electric conductor portion, which is disposed on a surface of said supporting member opposite to the dielectric material, for taking an electric connection with said first electrode; and

a second electrode disposed on a surface of said supporting member facing to the dielectric material.

15 4. The recording / reproducing head according to claim 3, wherein said recording / reproducing head is used as a device for reproducing the information from the dielectric recording medium on the basis of a scanning nonlinear dielectric microscopy method.

20 5. A recording / reproducing head for recording information in a dielectric material of a dielectric recording medium or reproducing information recorded in the dielectric material of the dielectric recording medium, the recording / reproducing head comprising:

25 a supporting member of a longitudinal shape which is long in one direction;

a first electrode, which is projective and which is disposed on

one end in the one direction of said supporting member, for applying an electric field to the dielectric material;

5 a substrate, which is disposed so as to surround said first electrode, for fixing the other end of said supporting member in the one direction;

an electric conductor portion, which is disposed on a surface of said substrate facing to the dielectric material, for taking an electric connection with said first electrode; and

10 a second electrode disposed so as to surround said first electrode and said electric conductor portion.

6. The recording / reproducing head according to claim 5, wherein said recording / reproducing head is used as a device for reproducing the information from the dielectric recording medium on
15 the basis of a scanning nonlinear dielectric microscopy method.

7. A recording / reproducing head for recording information in a dielectric material of a dielectric recording medium or reproducing information recorded in the dielectric material of the dielectric
20 recording medium, the recording / reproducing head comprising:

a supporting member of a longitudinal shape which is long in one direction;

a projection portion disposed on one end in the one direction of said supporting member;

25 a first electrode, which is penetrated from the tip portion of said projection portion and disposed in the central portion of said

projection portion, for applying an electric field to the dielectric material;

5 a substrate, which is disposed so as to surround said first electrode, for fixing the other end of said supporting member in the one direction;

an electric conductor portion, which is disposed on a surface of said supporting member opposite to the dielectric material, for taking an electric connection with said first electrode; and

10 a second electrode disposed on the surface of said supporting member facing to the dielectric material so as to surround said first electrode.

8. The recording / reproducing head according to claim 7, wherein said recording / reproducing head is used as a device for
15 reproducing the information from the dielectric recording medium on the basis of a scanning nonlinear dielectric microscopy method.

9. A method of producing a recording / reproducing head for recording information in a dielectric material of a dielectric
20 recording medium or reproducing information recorded in the dielectric material of the dielectric recording medium, the method comprising processes of:

forming on a substrate a convex portion for a first electrode for applying an electric field to the dielectric recording medium;

25 fabricating the substrate so as to form a supporting member for supporting the convex portion and a surrounding member

surrounding the supporting member;

forming a conductive film on the convex portion;

forming a first conductive layer, which is connected with the
conductive film formed on the convex portion, on a surface of the
5 substrate facing to the dielectric recording medium; and

forming a second conductive layer, which is electrically
insulated from the first conductive layer, on the surface of the
substrate facing to the dielectric recording medium.

10 10. The method of producing a recording / reproducing head
according to claim 9, comprising a process of preparing a plurality of
the recording / reproducing heads on the substrate and separating
them to be the individual recording / reproducing heads.

15 11. The method of producing a recording / reproducing head
according to claim 9, comprising a process of preparing a plurality of
the recording / reproducing heads on the substrate and separating
them with the predetermined number of them regarding as one head.

20 12. A method of producing a recording / reproducing head for
recording information in a dielectric material of a dielectric
recording medium or reproducing information recorded in the
dielectric material of the dielectric recording medium, the method
comprising processes of:

25 forming on a substrate a convex portion for a first electrode for
applying an electric field to the dielectric recording medium;

fabricating the substrate so as to form a supporting member for supporting the convex portion and a surrounding member surrounding the supporting member;

forming a hole piercing in the central part of the convex
5 portion;

disposing a conductive member in the hole; and

forming a first conductive layer on a surface of the substrate facing to the dielectric recording medium.

10 13. The method of producing a recording / reproducing head according to claim 12, comprising a process of disposing a second conductive layer, which is connected with the conductive member, on a surface of the substrate opposite to the surface facing to the dielectric recording medium.

15

14. The method of producing a recording / reproducing head according to claim 12, comprising a process of preparing a plurality of the recording / reproducing heads on the substrate and separating them to be the individual recording / reproducing heads.

20

15. The method of producing a recording / reproducing head according to claim 12, comprising a process of preparing a plurality of the recording / reproducing heads on the substrate and separating them with the predetermined number of them regarding as one head.